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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/800,227   | 03/12/2004  | Mark S. Kleefisch    | 37,275-00           | 8560             |
| 7590   | 06/14/2006  |                      | EXAMINER            |                  |
| BP America Inc.<br>Docket Clerk, BP Legal, M.C. 5East<br>4101 Winfield Road<br>Warrenville, IL 60555 |             |                      |                     | HEWITT, JAMES M  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 3679                |                  |

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/800,227             | KLEEFISCH ET AL.    |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | James M. Hewitt        | 3679                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 03 April 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.  
 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-17 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 30 December 2005 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 12/27/04.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of Group I (claims 1-17) in the reply filed on 4/3/06 is acknowledged.

Claims 18-25 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/3/06.

### *Information Disclosure Statement*

The information disclosure statement filed 12/27/04 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because: each U.S. patent is not identified by inventor, patent number, and issue date; references "AS" and "AT" on page 1 and on page 2 each have one of the author, title, date and/or pertinent pages incorrect. It has been placed in the application file, but the references lined through (AA-AL, AS, AT, and AR, AT) have not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

***Drawings***

The drawings were received on 12/30/05. These drawings are acceptable, however note the following objections:

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the mechanical means (claim 12) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to because FIG. 1a is a reduced version of FIG. 1, and shouldn't the locations of "A" and "B" be reversed in order to correspond with FIG. 1 and FIG. 1a? Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed

150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

The language should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it comprises more than one paragraph, and uses implied phrases such as "are disclosed" on line 2. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities:

On page 12, lines 1-2, it is unclear as to how FIGURE 1 can be said to comprise Fig. 1-a and Fig. 1-b, when FIG. 1 is shown as a separate figure, and is shown to be an enlarged version of FIG. 1a.

A brief description should be provided for FIG. 1a and FIG. 1b.

Appropriate correction is required.

### ***Claim Objections***

Claims 1-17 are objected to because of the following informalities:

Claim 1 is objected to under 37 CFR 1.75(i), which states "Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation."

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In claim 4, line 6, the phrase "the conductivities" lacks proper antecedent basis.

Should the phrase be "the electron conductivity and oxygen ion conductivity of the crystalline mixed metal oxide"?

In claim 5, line 3, "first" should be inserted before "rigid member".

Claim 7 is objected to under 37 CFR 1.75(i), which states "Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation."

In claim 7, line 2, a colon should be inserted immediately after "comprises".

In claim 8, lines 2-3, the phrase "the high strength metallic material contiguous with the girdle" lacks proper antecedent basis.

In claim 9, lines 6-7, the phrase "the conductivities" lacks proper antecedent basis. Should the phrase be "the electron conductivity and oxygen ion conductivity of the crystalline mixed metal oxide"?

Claim 11 is objected to under 37 CFR 1.75(i), which states "Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation."

In claim 11, line 5, "with" should be replaced with "and having".

In claim 11, lines 11-12, the phrase "the mating surfaces" lacks proper antecedent basis. It is unclear as to whether the phrase refers to one set or both sets of the recited mating surfaces.

In claim 12, line 2, the phrase "the mating surfaces" lacks proper antecedent basis. It is unclear as to whether the phrase refers to one set or both sets of the recited mating surfaces.

In claim 16, line 3, "rupture that is" should be replaced with "rupture, the girdle being".

In claim 17, lines 4-5, it is unclear as to what the phrase "disposed to contact fluid on at least one side of the joint" modifies.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7-8, 10-12 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by White et al (US 6,454,274).

White et al disclose a joint assembly for joining a ceramic membrane to a tube sheet used in supporting the ceramic membrane within a reactor. The joint assembly seals an open end of a tubular ceramic membrane to a tube sheet. The joint assembly includes a fixture connected to the tube sheet and a follower. The fixture and follower can be fabricated from HAYNES 230 alloy, HAYNES 214 or INCOLOY 800. The sealing element can be formed of an aluminosilicate fiber or a zirconia fiber. The

sealing element can also be formed of a paper or felt stuffing of the ceramic material. Ceramic minerals such as vermiculite can also be used. The sealing efficiency of the ceramic material can be enhanced by infiltrating the fibers with a particulate such as a refractory ceramic, or a powder of ceramic material, or a metal such as gold. The particulate material can be applied by dipping or spraying a slurry. The sealing element can be formed of a layer of ceramic powder or a graphite packing. The sealing element can take the form of a cone seal gasket (see FIG. 3 and FIG. 4). The inner and outer surfaces of the cone are tapered and mate and seal against the outer surface of the ceramic membrane and the inner surface of the fixture respectively. A differential pressure across the joint provides a compressive force on the sealing element through the mating surfaces.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over White et al (US 6,454,274) in view of the article "FABRICATION OF CERAMIC-MEMBRANE TUBES FOR DIRECT CONVERSION OF NATURAL GAS" by Balachandran et al, published at the 1992 International Gas Research Conference.

White et al fail to explicitly teach that the ceramic membrane includes a ceramic material comprising a crystalline mixed metal oxide selected from a class of materials that have an X-ray identifiable crystalline structure based upon the structure of the mineral perovskite, and which exhibit at operating temperatures, electron conductivity, oxygen ion conductivity, and the ability to separate oxygen from a gaseous mixture containing oxygen and one or more components by means of the conductivities.

Balachandran et al teach that such a ceramic material is useful in oxygen permeable membranes to produce value-added products. In view of Balachandran et al's teaching and since it has been held to be within the general skill of a worker to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, it would have been obvious to one having ordinary skill at the time the invention was made to employ a ceramic membrane includes a ceramic material comprising a crystalline mixed metal oxide selected from a class of materials that have an X-ray identifiable crystalline structure based upon the structure of the mineral perovskite, and which exhibit at operating temperatures, electron conductivity, oxygen ion conductivity, and the ability to separate oxygen from a gaseous mixture containing oxygen and one or more components by means of the conductivities in White et al.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Hewitt whose telephone number is 571-272-7084.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Stodola can be reached on 571-272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
JAMES M. HEWITT  
PRIMARY EXAMINER